

Text: *Modeling the Dynamics of Life: Calculus and Probability for Life Scientists, 2nd, by Frederick Adler*

Course Goals: Find the family of antiderivatives (if possible) for a continuous function. Approximate definite integrals using Riemann sums. Explain what the Fundamental Theorem of Calculus allows us to compute and do so for continuous functions. Solve pure-time differential equations. Find and determine the stability of equilibria in autonomous differential equations. Verify solutions to, and use Euler's method with, differential equations in two dependent variables. Compute definite integrals with infinite limits of integration. Study applications to population, reproduction, drug concentration, selection, and food intake using all of the aforementioned skills.

Instructor Notes:

- The course deals with both continuous and discrete functions, something our regular calculus sequence does not. It also has a strong focus on differential equations and their applications. This course consequently differs significantly in content from math 252.
- Students in this course are exclusively human physiology, biology, geological science, and environmental science majors. The fact that there are applications to biology included in homework and on tests is critical to the success of this course. It's worth letting them know that you aren't a mathematical biologist (or are you?), but that you are there as a facilitator of mathematics to applications that hopefully have relevance for them.
- Consider a hybrid assignment of homework: Some WebWork problems and some hand-in problems. Paper markers are available to grade the hand-in work.

WEEK SECTIONS TO COVER

Notes

1 4.1, 4.2, 4.3

2 4.3, 4.4

3 4.5, 4.6

(Winter) *Martin Luther King Jr. Day Monday*

4 4.7
*Review for Midterm
Midterm 1 (Chapter 4)*

5 5.1, 5.2

6 5.3, 5.4

7 5.5
Review for Midterm, Midterm 2

8 5.6, 5.7

9 5.8

(Fall) *Thanksgiving holiday Thursday/Friday.*

10

Catch-up, review

(Spring) *Memorial Day holiday Monday*

11 **Final exam during scheduled time (registrar.uoregon.edu/common/cals/finalscal.htm)**

Other Important Dates (<http://registrar.uoregon.edu/calendars/academic#fall2010>):

Monday of 2nd week

Last day to drop without a “W” (but only 75% tuition refund)

Wednesday of 2nd week

Last day to add a class

Sunday after 7th week

Last day to drop --- period!

- **Lecture handouts available from Mike Price upon request**